## **CLAIMS**

1. A negative electrode for a battery, the negative electrode comprising:

a collector;

an active material layer provided on the collector, the active material layer including at least one kind of matter in a group consisting of an elementary substance of tin, an elementary substance of silicon, an alloy including at least one of tin and silicon, and a compound including at least one of tin and silicon; and

an inorganic compound layer provided on the active material layer, the inorganic compound layer having a chemical composition expressed by general formula (1) described below, and having lithium ion conductivity.

$$Li_xPT_yO_z \cdots (1)$$

wherein component T is at least one kind of element selected from an element group consisting of element symbols Ti, Cu, Zr, Mo, Ta, and W, and additionally x, y, and z satisfy  $2.0 \le x \le 7.0$ ,  $0.01 \le y \le 1.0$ , and  $3.5 \le z \le 8.0$ , respectively.

2. The negative electrode for a battery according to claim 1, wherein x, y, and z satisfy  $2.0 \le x \le 3.0$ ,  $0.01 \le y \le 0.50$ , and  $3.5 \le z \le 4.0$ , respectively, in the general formula (1).

25

30

5

10

15

20

- 3. The negative electrode for a battery according to claim 1, wherein x, y, and z satisfy  $2.0 \le x \le 3.0$ ,  $0.01 \le y \le 1.0$ , and  $3.5 \le z \le 7.0$ , respectively, in the general formula (1).
  - 4. The negative electrode for a battery according to claim

- 1, wherein the active material layer includes lithium after charging.
- 5. The negative electrode for a battery according to claim
  1, wherein the active material layer includes metal and the metal is alloyed with the collector at a part of an interface with the collector.
- 6. A negative electrode for a battery, the negative electrode comprising:

a collector;

15

20

25

an active material layer provided on the collector, the active material layer including at least one kind of matter in a group consisting of an elementary substance of tin, an elementary substance of silicon, an alloy including at least one of tin and silicon, and a compound including at least one of tin and silicon; and

an inorganic compound layer provided on the active material layer, the inorganic compound layer having a chemical composition expressed by general formula (2) described below, and having lithium ion conductivity.

 $Li_xMO_yN_z$  · · · (2)

wherein component M is at least one kind of element selected from an element group consisting of element symbols Si, B, Ge, Al, C, Ga, and S, and additionally x, y, and z satisfy one of:

- $0.6 \le x \le 1.0$ ,  $1.05 \le y \le 1.99$ , and  $0.01 \le z \le 0.5$ , respectively;
- $1.6 \le x \le 2.0, \ 2.05 \le y \le 2.99, \ and \ 0.01 \le z \le 0.5,$  30 respectively;

 $1.6 \le x \le 2.0$ ,  $3.05 \le y \le 3.99$ , and  $0.01 \le z \le 0.5$ , respectively; and

 $4.6 \leq x \leq 5.0, \ 3.05 \leq y \leq 3.99, \ \text{and} \ 0.01 \leq z \leq 0.5,$  respectively.

5

15

- 7. The negative electrode for a battery a according to claim 6, wherein the active material layer includes lithium after charging.
- 8. The negative electrode for a battery according to claim 6, wherein the active material layer includes metal and the metal is alloyed with the collector at a part of an interface with the collector.
  - 9. A battery comprising:
    - a negative electrode including:

a collector;

an active material layer provided on the collector, the active material layer including at least one kind of matter in a group consisting of an elementary substance of tin, an elementary substance of silicon, an alloy including at least one of tin and silicon, and a compound including at least one of tin and silicon;

an inorganic compound layer provided on the active 25 material layer, the inorganic compound layer having a chemical composition expressed by general formula (1) described below, and having lithium ion conductivity;

electrolyte conducting lithium ions; and

a positive electrode reversibly storing and releasing 30 lithium ions.

 $Li_xPT_yO_z$  · · · (1)

wherein component T is at least one kind of element selected from an element group consisting of element symbols Ti, Cu, Zr, Mo, Ta, and W, and additionally x, y, and z satisfy  $2.0 \le x \le 7.0$ ,  $0.01 \le y \le 1.0$ , and  $3.5 \le z \le 8.0$ , respectively.

## 10. A battery comprising:

a negative electrode including:

a collector;

an active material layer provided on the collector, the active material layer including at least one kind of matter in a group consisting of an elementary substance of tin, an elementary substance of silicon, an alloy including at least one of tin and silicon, and a compound including at least one of tin and silicon;

an inorganic compound layer provided on the active material layer, the inorganic compound layer having a chemical composition expressed by general formula (2) described below, and having lithium ion conductivity;

electrolyte conducting lithium ions; and

a positive electrode reversibly storing and releasing lithium ions.

 $Li_xMO_yN_z$  · · · (2)

20

wherein component M is at least one kind of element 25 selected from an element group consisting of element symbols Si, B, Ge, Al, C, Ga, and S, and x, y, and z satisfy one of:

- $0.6 \le x \le 1.0$ ,  $1.05 \le y \le 1.99$ , and  $0.01 \le z \le 0.5$ , respectively;
- $1.6 \le x \le 2.0, \ 2.05 \le y \le 2.99, \ and \ 0.01 \le z \le 0.5,$  30 respectively;

 $1.6 \leq x \leq 2.0, \ 3.05 \leq y \leq 3.99, \ \text{and} \ 0.01 \leq z \leq 0.5,$  respectively; and

 $4.6 \le x \le 5.0, \ 3.05 \le y \le 3.99, \ \text{and} \ 0.01 \le z \le 0.5,$  respectively.